Amendments to the Specification

Please replace the title with the following amended title:

NEAR-FIELD OPTICAL FLYING HEAD CAPABLE OF ACHIEVING A THINNER LINE WIDTH NEAR-FIELD EXPOSURE

Please replace the second full paragraph on page 1 with the following amended paragraph:

Laser disks including CDs, VCDs, DVDs, MDs, ~~and~~ etc., have been intensively used as data storage medium for the advantages of high capacity, low cost, high portability, and durable use. Following the presence of AV (audio video) multimedia age, the demand for laser disk storage capacity becomes heavier than ever. It is important to increase the storage capacity of a laser disk without changing its dimension.

Please replace the last paragraph on page 1 spanning pages 1 and 2 with the following amended paragraph:

Various laser disk storage capacity improvement techniques have been developed. FIG. 1 shows a near field recording technique according to the prior art, which reduces the spot size of laser beam emitted by the read-write head to expose (write data into) the laser disk, so as to expose a signal groove of thinner line width, increasing the storage capacity of the laser disk. In brief, this method uses a server system to control a flying head **90** to “fly” on the surface of the laser disk **D** at a low elevation (i.e., the near-field distance). The flying head 90 has a semispherical SIL (solid immersion lens) **92** at the front side, and a focusing lens **94** disposed at an

inner side ~~and~~ adapted to focus laser beam onto the center area of the refraction face **96** of the SIL **92**, enabling a small amount of electromagnetic wave (evanescent wave) to penetrate the refraction face **96** and to expose the laser disk in the near field. Because the spot size of the laser beam is indirectly proportional to numerical aperture, the high refraction index of the SIL **92** reduces the speed of the laser beam, forming 1/n wavelength (because the distance between the refraction face and the laser disk is smaller than λ, light wave does not resume to its original wavelength when passed through the refraction face). Therefore, diffraction ~~limited~~ becomes limited to 1/n of a regular lens, i.e., numerical aperture is increased by n times, and the spot size of light emitted onto the disk is relatively reduced to achieve a thin line width exposure operation.

Please replace the last paragraph on page 5 spanning pages 5 and 6 with the following amended paragraph:

The aforesaid description is of the known art. The main features of the present invention are outlined hereinafter. The refraction face **32** of the SIL **30** is plated with a light scattering layer **[[44]]** 34 by means of evaporation or sputtering, and the outer surface of the light scattering layer **[[44]]** 34 is plated with a dielectric layer **[[46]]36**. The light scattering layer **[[44]]34** has the chemical property of "been decomposed to release silver atoms when received light energy or heat energy; or reduced to its original compound when light energy or heat energy disappeared". For example, AgOx (silver oxide) can be used for the light scattering layer **[[44]]34**. When heated, AgOx is decomposed into oxygen and silver atoms. On the contrary,

oxygen and silver atoms are reduced to AgOx when heat energy ~~disappeared~~disappears. The chemical equation is as follows:

$$AgOx \xrightarrow{+Heat} Ag+x/2O_2 \xrightarrow{-Heat} AgOx$$

Please replace the first full paragraph on page 6 with the following amended paragraph:

Alternatively, AgX (silver halide) may be used for the light scattering layer **[[44]]** 34 in which X of AgX represents F (fluorine), Cl (chlorine), Br (bromine), I (iodine), or At (astatine), i.e., the light scattering layer **[[44]]** 34 can be AgF (silver fluoride), AgCl (silver chloride), AgBr (silver bromide), AgI (silver iodide), or AgAt (silver astatide). When heated, AgX is decomposed to release silver atoms. The chemical equation is as follows:

$$AgX \xrightarrow{+h\upsilon} Ag+1/2X_2 \xrightarrow{-h\upsilon} AgX$$

(in which, $h\upsilon$ represents light energy)

Please replace the last full paragraph on page 6 with the following amended paragraph:

The dielectric layer**[[46]]** 36 adopts silicon nitride (Si_3N_4) or zinc sulfide-silicon dioxide ($ZnS\text{-}SiO_2$) to protect the light scattering layer **[[44]]**34, and to prohibit escaping of gas (oxygen, nitrogen) to the outside during chemical reaction of the light scattering layer **[[44]]**34. According to the present preferred embodiment, the

light scattering layer **[[44]]**<u>34</u> covers the whole area of the refraction face **32**, and the dielectric layer **[[46]]**-<u>36</u> covers also the whole area of the light scattering layer **[[44]]**<u>34</u>. Alternatively, both **[[44-]]**<u>34</u> and **[[46]]**<u>36</u> can cover the center area of the refraction face **32** only, i.e., the laser beam focusing area.

Please replace the first full paragraph on page 7 with the following amended paragraph:

When laser beam **L** passes through the focusing lens **40** toward the SIL **30**, it is focused onto the center of the refraction face **32**, enabling electromagnetic wave to penetrate the refraction face **32**. At this time, the light scattering layer **[[44]]**-<u>34</u>receives the light energy or heat energy of laser beam **L**, and is caused to release silver atoms within a very short reaction time. Silver atoms increase the energy of electromagnetic wave due to the effect of surface plasma, thereby causing an optical aperture to be opened in the focal point for the passing of laser beam **L** to have a relatively smaller spot size of the light at (the internal photoresistance layer of) the disk **D**. Therefore, the invention achieves a thinner line width near-field exposure to increase the signal track density and storage capacity of the disk.

Please replace the last paragraph on page 7 spanning pages 7 and 8 with the following amended paragraph:

FIG. 3 shows a second embodiment of the present invention. According to this embodiment, the near-field optical flying head **50** is shown comprising a carrier **60**, a SIL (solid immersion lens) **70**, and a focusing lens **80**. The

refraction face **72** of the SIL **70** is plated with a mask layer **74**. The outer surface of the mask layer **74** is plated with a silicon nitride dielectric layer **76**. The material of the mask layer **74** can be In (indium), Te (~~technetium~~tellurium), or Sb (antimony). When laser beam focused onto the refraction face **72** of the SIL **70**, the focused point of the mask layer **74** is fused, causing a refraction index difference between the fused part and non-fused part of the mask layer **74**, and therefore an optical aperture is opened for the passing of laser beam onto the disk. Because the diameter of the light spot at the disk is so small, minor line width can be exposed to laser beam. Therefore, this embodiment greatly improves the storage capacity of the disk.